CLAIMS

1. A method for transmitting data from a transmitter to a receiver of an ARQ communication system comprising the steps of:

    encoding data received from a signal source using a forward error correction (FEC) code to generate Galois field (GF) symbols;

    mapping the GF symbols using quadrature phase shift keying (QPSK) as modulation scheme;

    transmitting the QPSK modulation symbols to the receiver; and

    retransmitting modified QPSK modulation symbols to the receiver.

2. The method according to claim 1, wherein the modified QPSK modulation symbols are obtained by modifying the GF symbols prior to QPSK modulation.

3. The method according to claim 2, wherein the modification is obtained by an arithmetic operation.

4. The method according to claim 3, wherein the arithmetic operation is a multiplication of the GF symbols with a varying multiplier.

5. The method according to claim 4, wherein the multiplier is related to a transmission number.

6. The method according to claim 1, wherein the modified QPSK modulation symbols are obtained by mapping the GF symbols using a different QPSK modulation scheme.

7. The method according to one of claims 1 to 6, wherein the modification of the QPSK modulation symbols is selected such that a maximum uniform distribution of the accumulated euclidean distance between the symbols is obtained.

8.   The method according to one of claims 1 to 7, wherein the GF symbols are GF(4) symbols, which are obtained either directly from the encoding operation or after conversion of GF(2) encoder symbols prior to QPSK modulation.

9.   A transmitter for use in an ARQ communication system comprising:

a forward error correction (FEC) encoder (120) for receiving data from a signal source (110) and generating Galois field (GF) symbols;

a mapping unit (130) for mapping the GF symbols using QPSK as modulation scheme; and

a transmission unit (100) for transmitting QPSK modulation symbols and modified QPSK modulation symbols to a receiver.

10. The transmitter according to claim 9, wherein the mapping unit (130) comprises a plurality of mappers (130-1...130-3) with different modulation schemes to generate the modified QPSK modulation symbols in accordance with a transmission pattern.

11. The transmitter according to claims 9 or 10, further comprising a multiplication unit (121) for multiplying the GF symbols using a multiplier, which is related to a transmission number.

12. The transmitter according to one of claims 9 to 11, further comprising a converter for converting encoded GF(2) symbols into GF(4) symbols.

13. A receiver in an ARQ communication system comprising:

a demapping unit (210) for demapping received GF symbols modulated with QPSK as modulation scheme, said demapping unit being adapted to demodulate GF symbols, which have been modified in accordance with a transmission pattern; and

an FEC decoder (220) for decoding and combining the output of said demapping unit.

14. The receiver according to claim 13, wherein the demapping unit (210) comprises a plurality of demappers with different demodulation schemes selected in accordance with a transmission pattern.

15. The receiver according to claim 13 or 14, further comprising a multiplication unit for multiplying the GF symbols using a multiplier, which is related to a transmission number.

16. The receiver according to claims 13 to 15, wherein the FEC decoder (220) performs error decoding on the principle of euclidean distances in the complex signal space.

17. A communication system comprising a transmitter according to claims 9 to 12 and a receiver according to claims 14 to 16.